SKIN SENSITIZATION TO BAL[1]

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Sulzberger and co-workers (1) have investigated the sensitizing capacities of Bal for the normal and damaged skin. They found that the sensitizing index for the normal skin in their experiments was 19 per cent and that for the injured skin 66 per cent. Devitalized skin was very evidently easily sensitized, significantly more so than normal integument. However, an agent that can sensitize 19 per cent of normal subjects is far from innocuous. It is strange, therefore, that clinical reports on Bal as a sensitizer of the skin have not been seen, even though this product has been used a relatively short time. For this reason I am prompted to report briefly sensitization of my own skin with Bal.

The dermatitis appeared first on the palmar surfaces of the fingers at their bends and extended in both directions from these folds. The affected sites were dry, thickened, parchment-like loci that made themselves felt on bending the fingers. A peculiar feeling was present at the affected areas somewhat like the after-effects of the mildly phenol-burned skin surface. The involved surfaces were those that came into intimate contact with a syringe in making an intramuscular injection.

Several materials were used in making patch tests to discover the irritant and the only one found to cause a positive reaction was Bal. The 10 per cent Bal in peanut oil was diluted in the same menstruum to give a one per cent concentration. After six hours the site of its application on the flexor surface of the forearm reacted with sufficient discomfort of burning to necessitate the removal of the patch. This disclosed a moderately acute dermatitis, which consisted of numerous small, bright red papules crowding one another in some places but separated at others by intervening, apparently normal, skin. The dermatitis progressed in intensity for about twenty-four hours, remained stationary for two days and then receded rapidly. A week later nothing but a light brownish pigmentation was visible. Two weeks later still, the tested site appeared to be normal.

Bal, the initials for British Anti-Lewisite, is a dithiol, or more accurately, 2,3-dithiopropanal. A number of partially related compounds were used for patch testing in an attempt to gain an insight as to whether the whole molecule or only parts of it were responsible for the skin changes. These included 5 per cent propionic acid, propyl alcohol, glycerol, one per cent carbon disulphide in olive oil, cysteine, cystine, glutathione and methionine and a short exposure to the delivery nozzle from a Kipp hydrogen sulphide generator. Control patch tests were made with peanut oil, the diluent for Bal in ampoules, as well as five per cent benzyl benzoate which is also incorporated in the commercial product.

Some time previous to my becoming sensitized, I had occasion to investigate chemical depilatories, which commonly employ an alkaline sulphide. These were thought to have possibly paved the way for the subsequent sensitization to Bal. Accordingly, as part of the control tests, two commercial depilatories were allowed to remain on the skin long enough to remove the hair at the tested sites. None of the substances employed in these tests provoked a dermatitis. Perhaps other materials with structures more closely allied to the Bal molecule could have been chosen for further observations. It was felt, however, that the results with the substances that were used showed that it was not components of the molecule which were responsible for the sensitization but rather the entire molecule. (This does not gainsay that some substance whose structure very closely resembles and approaches that of Bal would not prove irritating if exposure were made to it.) A Prausnitz-Kuestner passive transfer test was made and this gave a negative result. A scratch test produced neither an immediate wheal nor a delayed reaction.

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SUMMARY

A personal skin sensitization with Bal is reported. The results of tests with materials to gain an insight as to whether a portion or the entire molecule was responsible for the cutaneous changes seemed to show that the latter was true. The Prausnitz-Kuestner passive transfer and a scratch test, both, gave negative results.

REFERENCE

(1) SULZBERGER, MARION B., BAER, R. L., AND KANOF, A.: Skin sensitization to Bal. J. Clin. Investigation, **25**: 488–496, July, 1946.